VOLUME - 12, ISSUE - 09, SEPTEMBER - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Orthopaedics

HIDDEN HAZARDS: OSTEOMYELITIS DUE TO A RETAINED TOOTHPICK IN THE LEFT FOREARM OF A 12-YEAR-OLD BOY: A CASE REPORT AND CLINICAL CONSIDERATIONS

Yathi Rajam. S* — Post graduate, Department of Orthopaedics, Narayana Medical College and Hospital, Nellore, Andhra Pradesh, India. *Corresponding Author

Nagulapati Vishnu Vardhan — Associate Professor, Department of Orthopaedics, Narayana Medical College and Hospital, Nellore, Andhra Pradesh, India.

Biju Ravindran — Professor & HOD, Department of Orthopaedics, Narayana Medical College and Hospital, Nellore, Andhra Pradesh, India

ABSTRACT This case report describes an exceptional instance of osteomyelitis in the right forearm of a 12-year-old male, arising from a neglected toothpick injury. The rarity of this etiology underscores the diagnostic complexities associated with unusual bone infections. The delayed identification of the causative agent emphasizes the need for healthcare providers to be vigilant in their evaluation of such cases. Implementing advanced imaging techniques is crucial in promptly diagnosing and managing these infections to prevent potential complications. This abstract aim to provide valuable clinical insights, highlighting the significance of thorough assessment and prudent use of diagnostic tools to ensure timely and appropriate intervention in atypical presentations of osteomyelitis.

KEYWORDS : Neglected foreign body, Tooth pick, Swelling, Osteomyelitis, Ultrasonography

INTRODUCTION:

Osteomyelitis, a formidable bone infection, predominantly arises from bacterial invasion following traumatic injuries or post-surgical complications. (1,2) Though medical literature acknowledges the association between osteomyelitis and retained foreign bodies (3,4) the manifestation of this condition due to toothpick injuries is a remarkably rare and extraordinary clinical occurrence. We delve into the intricacies of diagnosing and managing osteomyelitis triggered by a retained toothpick in the left forearm of a 12-year-old boy, a case initially overlooked and serendipitously detected due to subsequent swelling at the injury site.

Osteomyelitis, while infrequent, can afflict both adults and children, targeting various bones throughout the body. (1-3) This condition is notorious for its potential to cause chronic pain, limited mobility, and long-term complications if not promptly addressed. (5,6) Typically, osteomyelitis is associated with open fractures, surgical interventions, or deep soft tissue infections, making the development of osteomyelitis after a toothpick injury in an otherwise healthy young boy a highly unusual and challenging diagnostic enigma. (7,8)

The notion of an innocuous foreign object, such as a toothpick, inciting a severe and delayed bone infection adds complexity to osteomyelitis cases. The subtlety of initial symptoms and the absence of overt clinical indicators can lead clinicians astray, resulting in delayed diagnosis and subsequent ramifications for the patient's health and well-being.

In this report, we present the case of a 12-year-old boy who sustained an accidental injury involving a toothpick penetrating his left forearm. Tragically, the initial presentation did not raise significant concerns, as the patient remained asymptomatic immediately after the incident. Consequently, the injury was dismissed as trivial and left unattended, culminating in a delayed diagnosis of osteomyelitis, fortuitously discovered one year later when a painful swelling developed at the injury site. Through this case report, we seek to underscore the importance in evaluating and investigating seemingly minor injuries to avert potential complications, particularly in cases involving foreign objects. Furthermore, we emphasize the importance of considering osteomyelitis as a plausible consequence of retained toothpick injuries, even in the absence of classical symptoms of infection.

Case Presentation:

A 12-year-old male patient presented with a painful swelling and discharging sinus over his left forearm since 2 months. He had a history of accidental stab injury by toothpick 1 year back. The patient remained asymptomatic immediately after the incident, resulting in the injury being perceived as minor and not requiring further evaluation. Physical examination revealed a tender swelling of size 6x10cm which was insidious on onset and gradually progressive and attained the present size (Figure 1).

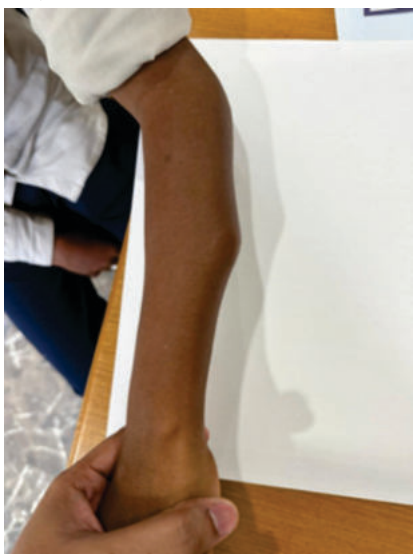

Figure 1: Presenting clinical picture

Discharge was purulent and sinus was fixed to the bone (left radius). Biochemical investigations showed raised Erythrocyte sedimentation rate (ESR), C- Reactive protein (CRP), Total leukocyte count (TLC) with increased neutrophilic count. Initial X-rays yielded inconclusive results, with no evidence of a retained foreign body but Involucrum with periosteal elevation was visualised (Figure 2).

Persisting swelling at the injury site prompted further investigation, including an Ultrasonography (USG) to assess the swelling, which revealed the prescience of 3 x 0.2cm linear sharp foreign body whose pointed end was piercing the cortex of left radius bone in the middle 1/3rd region. Correlating with history it was identified as toothpick (Figure 3).

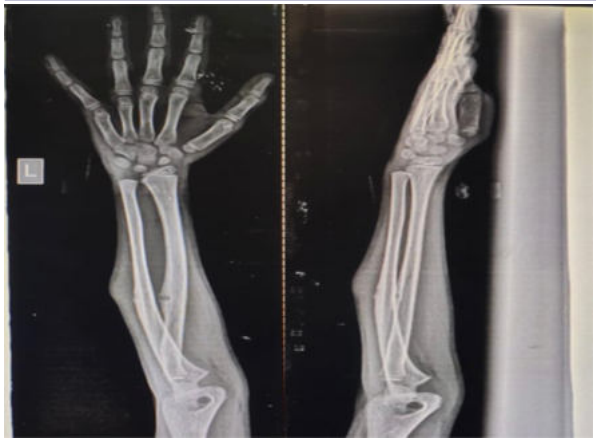

Figure 2: Preoperative X-ray radiograph picture: Anteroposterior view, Lateral view

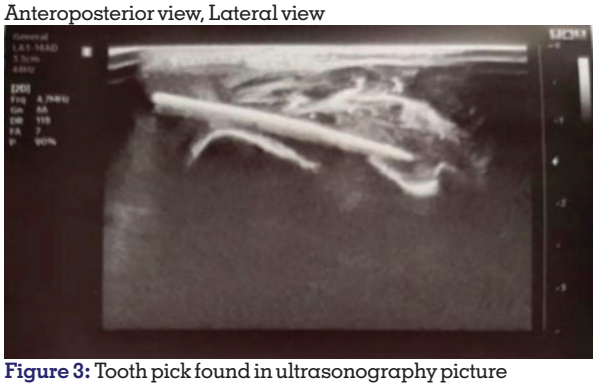

Figure 3: Tooth pick found in ultrasonography picture

The unexpected discovery of a retained toothpick lodged within the left forearm and surrounding bone inflammation led to finding the root cause of osteomyelitis. This underscores the significance of advanced imaging techniques in unveiling subtle and hidden etiologies.

Management Approach:

Following the diagnosis, timely and appropriate management was imperative to prevent complications. Surgical intervention, involving the removal of the retained toothpick and debridement of infected bone tissue, was promptly performed (Figure 4).

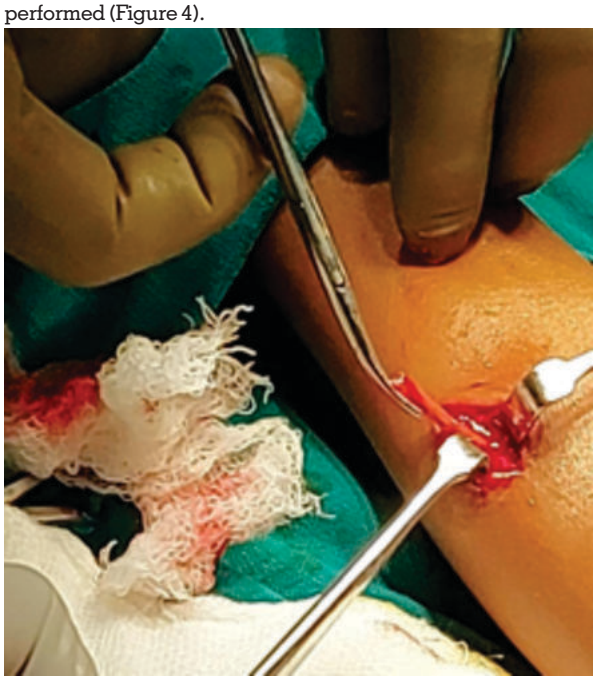

Figure 4: Intraoperative picture

Concurrently, targeted intravenous antibiotic therapy was initiated based on sensitivity testing to effectively eradicate the causative bacteria. Material was not sent for biopsy as it was quite evident as a toothpick (Figure 5).

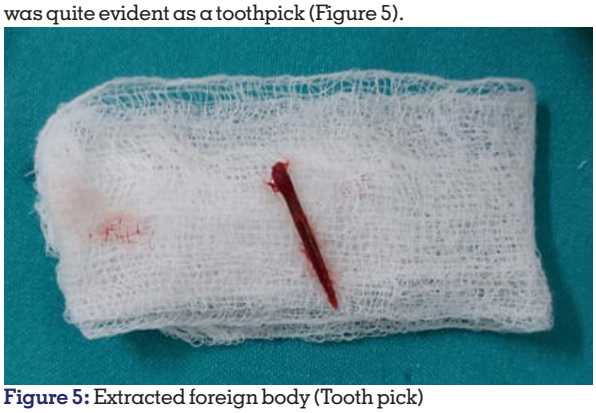

Figure 5: Extracted foreign body (Tooth pick)

Functional Outcome:

The delayed diagnosis likely impacted the patient's functional recovery. Early detection and intervention may have mitigated the extent of bone inflammation and hastened recovery. Treatment regimen was followed as per management of similar cases in literature. He was kept on antibiotics for six weeks. Cultures came negative after 2 months follow up. With appropriate management and physiotherapy, the patient exhibited gradual improvement over time.

DISCUSSION:

The presented case of osteomyelitis in the left forearm due to a retained toothpick in a 12-year-old boy highlights several important clinical and diagnostic considerations. The delayed diagnosis of osteomyelitis in this case illustrates the challenges faced by healthcare providers when dealing with rare and atypical etiologies of bone infections, especially in the absence of classical history. The discussion revolves around the diagnostic challenges, the serendipitous discovery of the retained toothpick, the management approach, and the functional outcome for the patient.

1. Diagnostic Challenges:

Osteomyelitis due to toothpick injuries is an exceedingly rare clinical entity, and its initial presentation can be subtle and misleading. The lack of overt clinical signs of infection, such as fever or local inflammation, can lead to a delay in diagnosis and management. (9,10) In this case, the patient did not exhibit any immediate symptoms following the toothpick injury, leading the treating physicians to consider the injury as minor and benign, resulting in a missed opportunity for early intervention.

2. Serendipitous Discovery:

The fortuitous discovery of the retained toothpick, which was missed in the initial imaging, highlights the importance of thorough and detailed investigations. The patient's persistent swelling at the injury site prompted further imaging with an USG, which revealed the retained foreign body and surrounding bone inflammation characteristic of osteomyelitis. (11) This accidental discovery emphasises the need for clinical suspicion even in the absence of classic symptoms, particularly in cases where the cause of the injury may not be initially apparent.

3. Management Approach:

Upon confirming the diagnosis of osteomyelitis due to the retained toothpick, prompt and appropriate management was essential to prevent further complications. The patient underwent immediate surgical intervention to remove the toothpick and debride infected bone tissue. Surgical debridement is vital in cases of osteomyelitis to eliminate the

source of infection and promote bone healing. In conjunction with surgery, intravenous antibiotic therapy was initiated based on sensitivity testing to target the causative bacteria effectively. (12)

4. Functional Outcome:
The delayed diagnosis and subsequent intervention undoubtedly impacted the patient's functional recovery and healing process. Early detection of the retained toothpick and timely treatment might have mitigated the extent of bone inflammation and facilitated a speedier recovery. These unnoticed foreign bodies have the potential to cause deep seated infections such as granuloma, cellulitis, osteomyelitis – manifesting at a later stage, affecting the patient's daily activities. However, the patient showed improvement over time with appropriate management and physiotherapy. Long-term follow-up is essential to monitor bone healing, functional restoration, and the prevention of potential complications.

5. Lessons Learned:
This case report underscores the significance of maintaining a high index of suspicion for unusual etiologies of bone infections, particularly in young patients who may not always exhibit classic symptoms. It emphasises the importance of thorough history-taking, meticulous physical examination, and the judicious use of advanced imaging techniques, such as USG, Computerized tomography (CT), Magnetic resonance imaging (MRI), when investigating cases of unexplained swelling at an injury site. (13-15) This case serves as a reminder to healthcare providers to approach every patient encounter with a comprehensive and open-minded approach, considering even rare and unexpected causes of bone infections.

Limitations:
A limitation of this case report is the inability to precisely identify the reason for the delayed presentation of the swelling. Factors such as the patient's reluctance to report minor discomfort may have contributed to the delayed medical attention. Additionally, the potential for complications related to osteomyelitis and long-term functional outcomes may need to be closely monitored in follow-up assessments.

Clinical Considerations:
This case report serves as a valuable learning experience for healthcare professionals, highlighting the importance of maintaining a high index of suspicion for rare etiologies of bone infections, especially in paediatric patients with atypical presentations. It underscores the significance of thorough history-taking, meticulous physical examination, and the utility of advanced imaging techniques, such as USG, MRI, in investigating unexplained swellings at injury sites. Healthcare providers should remain attentive, considering uncommon causes of bone infections to ensure early diagnosis and timely management, ultimately optimising patient outcomes.

CONCLUSION:
In conclusion, this case report highlights the importance of maintaining clinical vigilance and considering rare etiologies in the diagnosis and management of bone infections. The delayed diagnosis of osteomyelitis due to a retained toothpick serves as a critical reminder for healthcare providers to be thorough in their evaluations, especially in cases involving seemingly trivial injuries. By sharing this clinical experience, we hope to enhance awareness and encourage a more comprehensive approach to evaluating injuries, ultimately leading to improved patient care and outcomes.

Acknowledgement:
All involved authors make no further acknowledgements

Declaration of interest: None

REFERENCES:
1. Agarwal, A. (2019). Foreign Body Related Extremity Trauma in Children: Thorn Pricks. *Indian Journal of Orthopaedics*, *53*(1), 214.
2. Agarwal, A., & Agarwal, S. (2019). Retained foreign body masquerading as chronic osteomyelitis: A series of 3 cases and literature review. *Journal of Clinical Orthopaedics and Trauma*, *10*(4), 816–821.
3. Ando, A., Hatori, M., Hagiwara, Y., Isefuku, S., & Itoi, E. (2009). Imaging features of foreign body granuloma in the lower extremities mimicking a soft tissue neoplasm. *Upsala Journal of Medical Sciences*, *114*(1), 46–51.
4. Campbell, E. A., & Wilbert, C. D. (2023). Foreign Body Imaging. In *StatPearls*. StatPearls Publishing.
5. Farrell, J., & Bancroft, L. W. (n.d.). *Radiologic Case Study*. Orthopedics. Retrieved September 17, 2023, from https://journals.healio.com/doi/10.3928/01477447-20130724-01
6. Jarraya, M., Hayashi, D., de Villiers, R. V., Roemer, F. W., Murakami, A. M., Cossi, A., & Guermazi, A. (2014). Multimodality imaging of foreign bodies of the musculoskeletal system. *AJR. American Journal of Roentgenology*, *203*(1), W92–W102.
7. Lee, Y. J., Sadigh, S., Mankad, K., Kapse, N., & Rajeswaran, G. (2016). The imaging of osteomyelitis. *Quantitative Imaging in Medicine and Surgery*, *6*(2), 184–198.
8. Pushpasekaran, N., Muthulingam, M., Marimuthu, C., Babu, R., & Rajapalani Kumar, N. K. (2017). Unusual Presentation of Foreign Body Granuloma of the Foot After Sharp Injury Mimicking a Malignant Lesion: A Case Report. *The Journal of Foot and Ankle Surgery: Official Publication of the American College of Foot and Ankle Surgeons*, *56*(6), 1276–1278.
9. Roth, S., Zaninovic, M., & Roth, A. (2017). Sponge Rubber Revealed Two Years After Penetrating Injury: A Case Report. *The Journal of Foot and Ankle Surgery: Official Publication of the American College of Foot and Ankle Surgeons*, *56*(4), 885–888.
10. Huang, Y. M., Yang, S. W., Chen, C. Y., Hsu, C. J., & Chang, W. N. (2020). Residual foreign body in the foot causing chronic osteomyelitis mimicking a pseudotumor: A case report. The Journal of international medical research, 48(6), 300060520925379. https://doi.org/10.1177/0300060520925379
11. Walter, G., Kemmerer, M., Kappler, C., & Hoffmann, R. (2012). Treatment algorithms for chronic osteomyelitis. Deutsches Arzteblatt international, 109(14), 257–264. https://doi.org/10.3238/arztebl.2012.0257
12. Alemdar, C. (2013). Orthopedic approach to foreign body stings. *Journal of Clinical and Experimental Investigations*, *4*(4), 443-448. 10.5799/ahinjs.01.2013.04.0321
13. Chandrashekara, C. M., George, M. A., & Al-Marboi, B. S. (2013). Neglected Foreign Body, the Cause of Navicular Osteomyelitis in A Paediatric Foot: A Case Report. Journal of orthopaedic case reports, 3(3), 26–29. https://doi.org/10.13107/jocr.2250-0685.111
14. Gupta, M., Kumar, D., Jain, V. K., Naik, A. K., & Arya, R. K. (2015). Neglected Thorn Injury Mimicking Soft Tissue Mass in a Child: A Case Report. Journal of clinical and diagnostic research : JCDR, 9(5), RD03–RD4. https://doi.org/10.7860/JCDR/2015/12447.5963
15. Paliwal, A. K., Sahdev, R., Deshwal, A., & Ram, B. (2021). Role of ultrasound in the diagnosis of paediatric acute osteomyelitis. Journal of ultrasonography, 21(84), 34–40. https://doi.org/10.15557/JoU.2021.0005.